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The abundances of V, Cr, and Mn in the mantles of the Earth and Moon are very similar, and are distinct from all other sampled solar system bodies. This similarity has led to the suggestion that there is a genetic relationship between the Earth and Moon, more specifically, that the Moon was derived from the mantle of the Earth after formation of the core. This proposal is at odds with the Giant Impact paradigm of lunar origin and our current understanding of the formation of the terrestrial planets.

During the award period, some of the necessary experimental procedures were developed. Specifically, an assembly design has been developed to permit heating of metal by insulating it from highly conducting diamond. A Nd-YAG laser was assembled, aligned and tested. The technique for preparation of the run products for electron microprobe analysis was developed, and an alternative approach has been identified. A scheme to carry out polybaric experiments on a single charge was developed.

The experiments carried out did not lead to conclusive results, and the arguments advanced by Drake *et al.* (1989) and Drake (1990) remain the best summary of the status of the problem.

References:

- Drake (1990) *Nature* **347**, 128.
Drake *et al.* (1989) *Geochim. Cosmochim. Acta* **53**, 2101.